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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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McDermott Will & Emery  
600 13th Street NW  
Washington, DC 20005-3096

EXAMINER
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COMLEY, ALEXANDER BRYANT

ART UNIT	PAPER NUMBER
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3746

MAIL DATE	DELIVERY MODE
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05/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/509,748	<b>Applicant(s)</b> IDE ET AL.	
	<b>Examiner</b> ALEXANDER B. COMLEY	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/30/2004, 1/27/2006</u> .                                    | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/26/2008 has been entered.

### ***Status of Claims***

1. The examiner acknowledges receipt of the amendments filed on 3/26/2008. The amendment amended the language of Claims 1 & 8, cancelled Claims 2 & 3, and has added new dependent Claim 10. Therefore, Claims 1 & 4-10 now remain pending, and will be addressed below.

### ***Claim Objections***

2. Claim 7 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only--, and/or, -cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim would under normal procedure not be further treated on the merits. However, since the previous action did in fact treat the claim, the present action will address claim 7 on the merits as well.

***Specification***

2. The disclosure is objected to because of the following informalities: On page 7 of applicant's specification, the phrase "R of the shoulder" appears. It appears that a word is either missing, or misspelled. Appropriate correction is required.

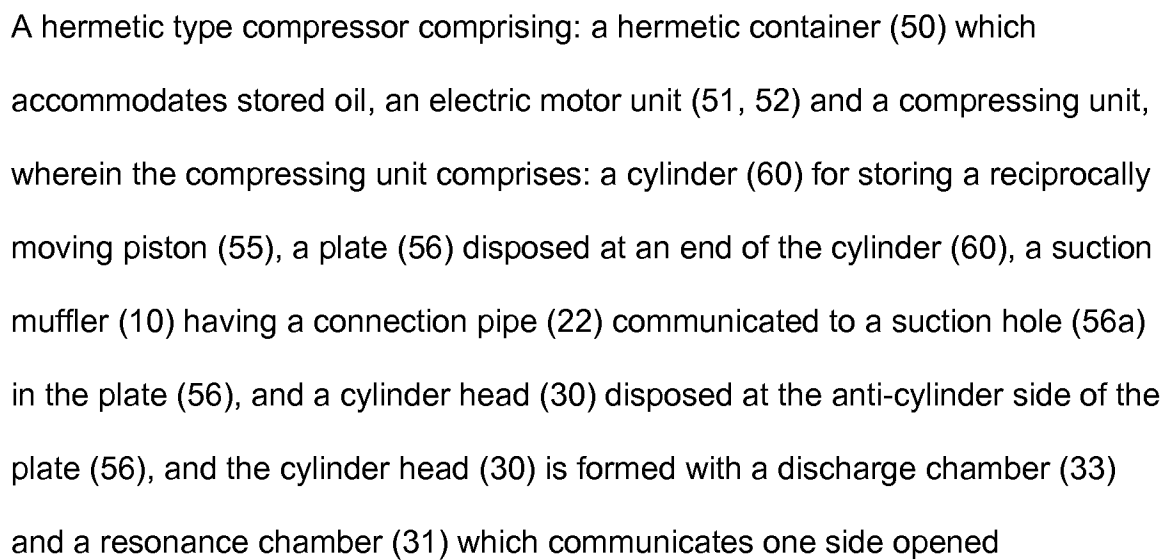
***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1 & 6-7** are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent to Lee (5,542,824) directed to a Refrigerant Compressor Having Interconnected Muffler Section.



connection pipe (22); a flange (233) of which shape is generally U-shaped having upper and lower surfaces and an outer periphery is disposed at an outer periphery of the connection pipe (22); the cylinder head (30) is provided with a generally U-shaped groove (234) to which the generally U-shaped flange (233) is fitted at a position corresponding to the flange (233); and by fitting the flange (233) into the groove (234), having an effective sealing width added to the upper and lower surfaces and the outer surface, thereby forming a seal portion so as to prevent a leakage of pressure pulsation in the resonance chamber (31) to the outside.

As shown in Figures 3 and 4 above, Lee discloses a hermetic compressor unit that utilizes a specially-designed suction muffler attachment structure designed to affix the muffler to the cylinder head using flange-and-groove connection means (See Fig. 4). In particular, Lee discloses "A pair of protruding ears 233 form nut fixing grooves 234 and are received by the concave grooves 32 formed at the sides of the suction chamber 31 in the cylinder head 30. The ears are fastened to holes 32a formed in the concave grooves 32 by fastening members 239." (Column 5, Lines 27-31) Therefore, it is clear that Lee's suction muffler is attached using U-shaped flanges placed within corresponding U-shaped grooves, and consequently, would provide improved sealing specifically at the resonance chamber interface.

5. Regarding dependent **Claims 6 & 7**, and with particular reference to Figure 4, Lee discloses a ring-like seat, or base 20, designed to be disposed along the inner wall

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of the nearly-semi-circular resonance chamber 31 of the cylinder head 30. In particular, Lee discloses "The cylinder head 30 has an inner side surface formed with (i) a discharge chamber 33 for conducting the refrigerant compressed to high pressure and high temperature by the piston 55 in the cylinder block 60, and (ii) a receptacle groove 31 on which a base unit 23 of a base muffler 20 is seated" (Column 4, Lines 32-37)

### ***Claim Rejections - 35 USC § 103***

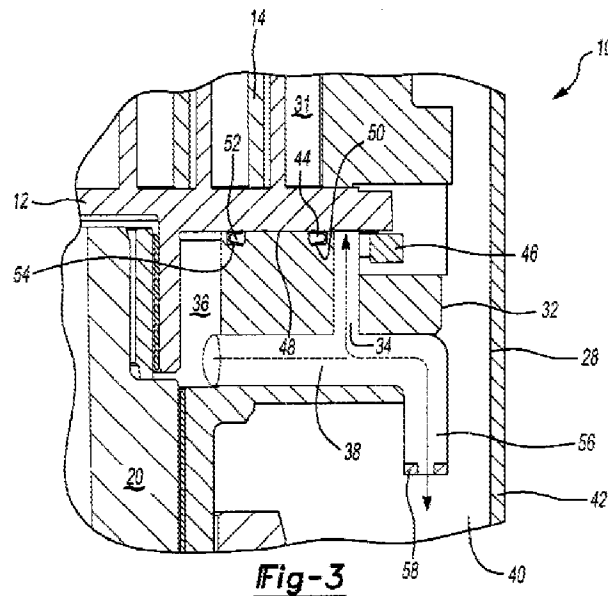
6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. **Claims 4-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent to Lee (5,542,824) directed to a Refrigerant Compressor Having Interconnected Muffler Section in view of United States Patent to Fenocchi et al. (6,464,480) directed to an Oil Spout for a Scroll Compressor.

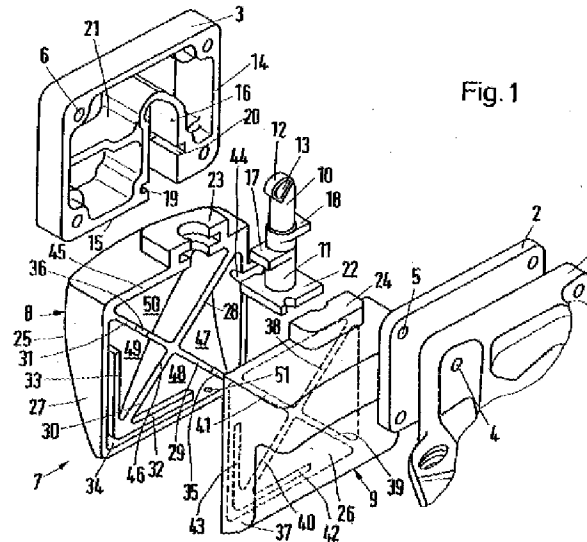


Lee does not disclose an oil hole disposed at the bottom of the suction muffler specifically for allowing oil to lubricate the seal portion (although Lee does disclose an oil hole located at the bottom of the suction muffler). However, Fenocchi specifically discloses, in Figure 3 seen above, a compressor having an oil spout 34 that redirects a portion of oil entering an oil return passage 38 to supply lubrication between an outer seal 44 and a coupling 46. Fenocchi's setup provides enhanced seal reliability, as made clear by Fenocchi stating "The oil spout provides a continual flow of lubrication to the outer seal and the coupling, preventing excessive wear of the outer seal and improving seal reliability" (Column 1, Lines 54-56). Therefore, to one of ordinary skill desiring enhanced seal life through lubrication, it would have been obvious to utilize the techniques disclosed in Lee in combination with those seen in Fenocchi in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the suction muffler and suction base of Lee with an oil hole similar to that of Fenocchi in order to obtain predictable results;



those results being a more tightly-sealed suction muffler that greatly minimizes audible annoyances while lengthening the overall seal life.

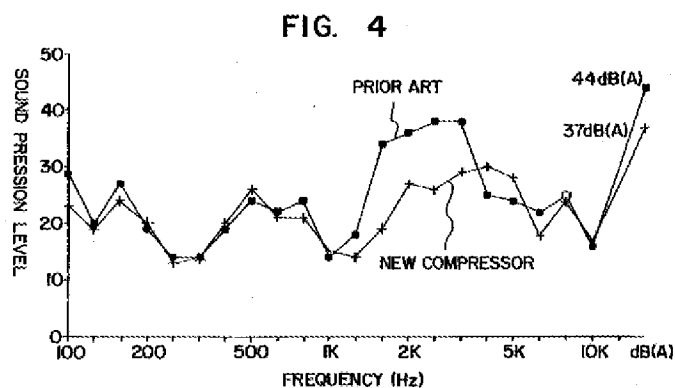
9. **Claims 8 & 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent to Lee (5,542,824) directed to a Refrigerant Compressor Having Interconnected Muffler Section in view of United States Patent to Outzen (4,759,693) directed to a Suction Sound Damper



Lee does not specifically disclose that the resonance frequency of the suction muffler opening is coincident with the resonance frequency of a resonance muffler. However, Outzen discloses the use of appropriately selected resonance frequencies when and if less noise is desired. In particular, Outzen discloses a suction sound damper designed to eliminate resonance oscillations altogether by stating "It is particularly favourable for the shells to be substantially rectangular...Such a suction sound damper can be accommodated in the capsule to save space and has an

extraordinary strength which ensures that resonance oscillations of the housing do not occur at all or lie above the hearing threshold" (Column 2, Lines 67-68; Column 3, Lines 1-6) Consequently, it would have been obvious at the time the invention was made to disclose in either Lee or Outzen that the resonance frequencies are the same for the suction muffler opening and the resonance muffler. Therefore, to one of ordinary skill desiring a hermetic compressor that minimizes operating noise, it would have been obvious to utilize the techniques disclosed in Lee in combination with those seen in Outzen in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the sealing structure of Lee with the appropriately tuned frequencies of Outzen in order to obtain predictable results; those results being a much quieter compressor that eliminates much of the audible annoyances associated with comparable compressors.

10. **Claims 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent to Lee (5,542,824) directed to a Refrigerant Compressor Having Interconnected Muffler Section in view of United States Patent to Alfano et al. (5,487,648) directed to a Shell Configuration for a Hermetic Compressor.



Lee does not disclose that the resonance frequency of a plane portion of the hermetic container and the resonance frequency of the opening of the suction muffler are independent of each other. However, Alfano et al. specifically discloses the particular method of designing the container to have a resonance frequency different than that of motor compressor itself. In particular, Alfano states, "In the hermetic motor compressors for home refrigerators, beside the efficiency, a very important issue is the noise produced by the motor compressor and transmitted outside by the shell. It is known that for reducing the noise it is necessary to shape the shell in such a way that its resonance frequency is different from the frequency of the motor compressor." (Column 1, Lines 23-29) Therefore, since the suction muffler together with the motor may form the "motor compressor", Alfano et al. makes it obvious to vary the frequencies of the hermetic container and the suction muffler. Therefore, to one of ordinary skill desiring a quieter compressor unit, it would have been obvious to utilize the techniques disclosed in Lee in combination with those seen in Alfano in order to obtain such a result. Consequently, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the compressor structure of Lee with the differing resonant frequencies of Alfano et al. in order to obtain predictable results; those results being a much quieter compressor that eliminates much of the audible annoyances associated with comparable compressors.

***Response to Arguments***

11. Applicant's arguments with respect to Claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

12. In regards to applicant's assertions that the Lee ('106) reference fails to teach a U-shaped groove to which a generally U-shaped flange is fitted specifically at the interface between the resonance chamber and the suction muffler, the examiner has applied new reference Lee ('824) which specifically teaches the use of a generally U-shaped flange fitted into a generally U-shaped receiving groove. Please see Figure 4 shown previously above, as well as the analysis for Independent Claim 1. Lee's flange-and-groove structure is one that is located specifically at the interface between the resonance chamber and the suction muffler base, and consequently, leakage at the interface between the resonance chamber 31 and suction muffler base 20 is lessened.

13. Regarding applicant's assertion that the specification describes the drawback of leakage specifically at the resonance space/connection pipe interface, it is clear that the newly applied structure of Lee ('824) would help prevent leakage specifically at this interface (See Figure 4 above, as well as Figure 7 of Lee '824)

14. In response to applicant's argument that the previously cited art is not relevant to applicant's invention, recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to

patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, it meets the claim.

### ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following selected patents and technical literature is cited to further show the state of the art in suction mufflers and related technology in general where the not all obvious salient features of the patents are disclosed as follows:

- US Patent 6,358,019 to Iversen et al. discloses a suction sound damper for a hermetically-sealed compressor that utilizes a lubricating oil collection space to help improved sound dampening
- US Patent 5,769,613 to Kim discloses a muffler apparatus for a hermetically sealed compressor that utilizes deformable hooks to help prevent vibration, and consequently noise, during compressor operation
- US Patent 6,017,197 to Jensen et al. discloses a suction sound damper for a refrigerant compressor which utilizes a flanged outlet connector inserted between two opposed housing portions
- US Patent 5,733,106 to Lee discloses a suction muffler for a hermetically sealed compressor designed to reduce noise attenuation, and contains many of the same structural features claims by applicant

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER B. COMLEY whose telephone number is (571)270-3772. The examiner can normally be reached on M-F 7:30am - 5:00am EST (Alternate Fridays Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon C. Kramer can be reached on (571)-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander B Comley/  
Examiner, Art Unit 3746

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
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